

Application No.: 09/271,584

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Docket No.: 529642000200

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Currently Amended): A transgenic plant comprising a recombinant nucleic acid molecule encoding a polypeptide having Na⁺/H⁺ transporter activity that provides increased salt tolerance in a cell, wherein said nucleic acid molecule is selected from the group consisting of:

- (a) a nucleic acid molecule ~~of the coding strand~~ shown in SEQ ID NO:1, or a complement thereof;
- (b) a nucleic acid molecule encoding SEQ ID NO:2; and
- (c) ~~a nucleic acid molecule that specifically hybridizes to the sequence set forth in SEQ ID NO:1 or the complement of the sequence set forth in SEQ ID NO:1 under conditions that include at least one wash in 0.1xSSC, 0.1% SDS, at 65° C for fifteen minutes; and~~
- (d) a nucleic acid molecule encoding an amino acid sequence at least 95% identical to the amino acid sequence shown in SEQ ID NO:2.

Claims 2-4 (Canceled).

Claim 5 (Previously Presented): The transgenic plant of claim 1, wherein the polypeptide having Na⁺/H⁺ transporter activity comprises an AtNHX transporter polypeptide.

Claim 6 (Canceled).

Claim 7 (Previously Presented): A transgenic plant comprising a recombinant AtNHX nucleic acid molecule isolated from *Arabidopsis thaliana* encoding a transporter polypeptide having Na⁺/H⁺ transporter activity that provides increased salt tolerance in a cell.

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Claim 8 (Previously Presented): The transgenic plant of claim 1, further comprising a constitutive promoter sequence or an inducible promoter sequence, operatively linked so that the promoter provides transcription of the recombinant nucleic acid molecule in the plant.

Claim 9 (Canceled).

Claim 10 (Previously Presented): The transgenic plant of claim 1, wherein the recombinant nucleic acid molecule is chemically synthesized.

Claim 11 (Previously Presented): The transgenic plant of claim 1, wherein the recombinant nucleic acid molecule is isolated from *Arabidopsis thaliana*.

Claims 12-13 (Canceled).

Claim 14 (Currently Amended): The transgenic plant of claim 12, wherein the polypeptide having Na⁺/H⁺ transporter activity extrudes monovalent cations ~~are extruded into a vacuole or into the extracellular space of said plant.~~

Claims 15-17 (Canceled).

Claim 18 (Currently Amended): An expression transgene comprising a recombinant nucleic acid molecule encoding a polypeptide having Na⁺/H⁺ transporter activity that provides increased salt tolerance in a cell operably linked to a promoter selected from the group consisting of a super promoter, a 35S promoter of cauliflower mosaic virus, a drought-inducible promoter, an ABA-inducible promoter, a heat shock-inducible promoter, a salt-inducible promoter, a copper-inducible promoter, a steroid-inducible promoter and a tissue-specific promoter, wherein said nucleic acid molecule is selected from the group consisting of:

(a) a nucleic acid molecule ~~of the coding strand~~ shown in SEQ ID NO:1, or a complement thereof;

(b) a nucleic acid molecule encoding SEQ ID NO:2; and

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~~(c) a nucleic acid molecule that specifically hybridizes under to the sequence set forth in SEQ ID NO:1 or the complement of the sequence set forth in SEQ ID NO:1 under conditions that include at least one wash in 0.1xSSC, 0.1% SDS, at 65° C for fifteen minutes; and~~

(d) a nucleic acid molecule encoding an amino acid sequence at least 95% identical to the amino acid sequence shown in SEQ ID NO:2.

Claim 19 (Currently amended): A plant cell or a progeny thereof, wherein the plant cell, or the progeny thereof comprises the expression transgene of claim 18, ~~or progeny of the plant cell.~~

Claim 20 (Canceled).

Claim 21 (Currently Amended): A plant, a plant part, a seed, a plant cell or a progeny thereof, wherein the plant, plant part, seed, plant cell, or progeny thereof comprises the expression transgene of claim 18.

Claim 22 (Original): The plant part of claim 21, comprising all or part of a leaf, a flower, a stem, a root or a tuber.

Claim 23 (Currently amended): The plant, plant part, seed or plant cell of claim 21, wherein the plant, plant part, seed or plant cell is of a species selected from the group consisting of alfalfa, almond, apple, apricot, arabidopsis, artichoke, atriplex, avocado, barley, beet, birch, brassica, cabbage, cacao, cantaloupe, carnations, castorbean, cauliflower, celery, clover, coffee, corn, cotton, cucumber, garlic, grape, grapefruit, hemp, hops, lettuce, maple, melon, mustard, oak, oat, olive, onion, orange, pea, peach, pear, pepper, pine, plum, poplar, potato, prune, radish, rape, rice, roses, rye, salicornia, sorghum, soybean, spinach, squash, strawberries, sunflower, sweet corn, tobacco, tomato and wheat.

Claim 24 (Currently Amended): The plant, plant part, seed or plant cell of claim 21, wherein the plant ~~comprises~~ is a dicot plant.

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Claim 25 (Currently Amended): The plant, plant part, seed or plant cell of claim 21, wherein the plant ~~comprises~~ is a monocot plant.

Claim 26 (Currently Amended): A method for producing a recombinant plant cell that expresses a nucleic acid molecule, the method comprising introducing into ~~the~~ plant cell the expression transgene of claim 18.

Claim 27 (Previously Presented): A method of producing a genetically transformed plant which expresses PNHX transporter polypeptide, comprising regenerating a genetically transformed plant from the plant cell, seed or plant part of claim 21.

Claim 28 (Previously Presented): The method of claim 26, wherein the genome of the plant cell also comprises a functional PNHX gene.

Claim 29 (Previously Presented): The method of claim 26, wherein the genome of the plant cell does not comprise a functional PNHX gene.

Claim 30 (Original): A transgenic plant produced according to the method of claim 27.

Claim 31 (Previously Presented): A method for expressing a PNHX transporter polypeptide in the plant cell of claim 19, the method comprising culturing the plant cell under conditions suitable for gene expression, wherein the PNHX transporter polypeptide is expressed.

Claim 32 (Previously Presented): A method for producing a transgenic plant that expresses elevated levels of PNHX transporter polypeptide relative to a non-transgenic plant, comprising transforming a plant with the expression transgene of claim 18 such that the PNHX transporter polypeptide is expressed at elevated levels in the plant relative to a plant that has not been transformed with the expression transgene.

Claims 33-52 (Canceled).

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Claim 53 (Currently Amended): A method of producing a genetically transformed plant, wherein the method comprises comprising:

(a) cloning or synthesizing a nucleic acid molecule encoding a polypeptide having Na^+/H^+ transporter activity that provides increased salt tolerance in a cell, wherein said nucleic acid molecule is selected from the group consisting of: (i) a nucleic acid molecule ~~of the coding strand~~ shown in SEQ ID NO:1, or a complement thereof; (ii) a nucleic acid molecule encoding SEQ ID NO:2; and (iii) ~~a nucleic acid molecule that specifically hybridizes to the sequence set forth in SEQ ID NO:1 or the complement of the sequence set forth in SEQ ID NO:1 under conditions that include at least one wash in 0.1xSSC, 0.1% SDS, at 65° C for fifteen minutes; and~~ (iv) a nucleic acid molecule encoding an amino acid sequence at least 95% identical to the amino acid sequence shown in SEQ ID NO:2, wherein said nucleic acid molecule encodes a polypeptide capable of providing salt tolerance to a plant;

(b) inserting the nucleic acid molecule in a vector so that the nucleic acid molecule is operably linked to a promoter;

(c) inserting the vector into a plant cell or plant seed;

(d) regenerating ~~the~~ a plant from the plant cell or plant seed, wherein salt tolerance in the plant is increased compared to a wild type plant.

Claim 54 (Previously Presented): A transgenic plant produced according to the method of claim 53.

Claim 55 (Canceled).

Claim 56 (Previously Presented): An isolated nucleic acid molecule encoding a TNHX transporter polypeptide or fragment thereof or a PNHX transporter polypeptide or a fragment thereof, wherein said polypeptide or fragment thereof has Na^+/H^+ transporter activity that provides increased salt tolerance in a cell, wherein said nucleic acid comprises SEQ ID NO:1.

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